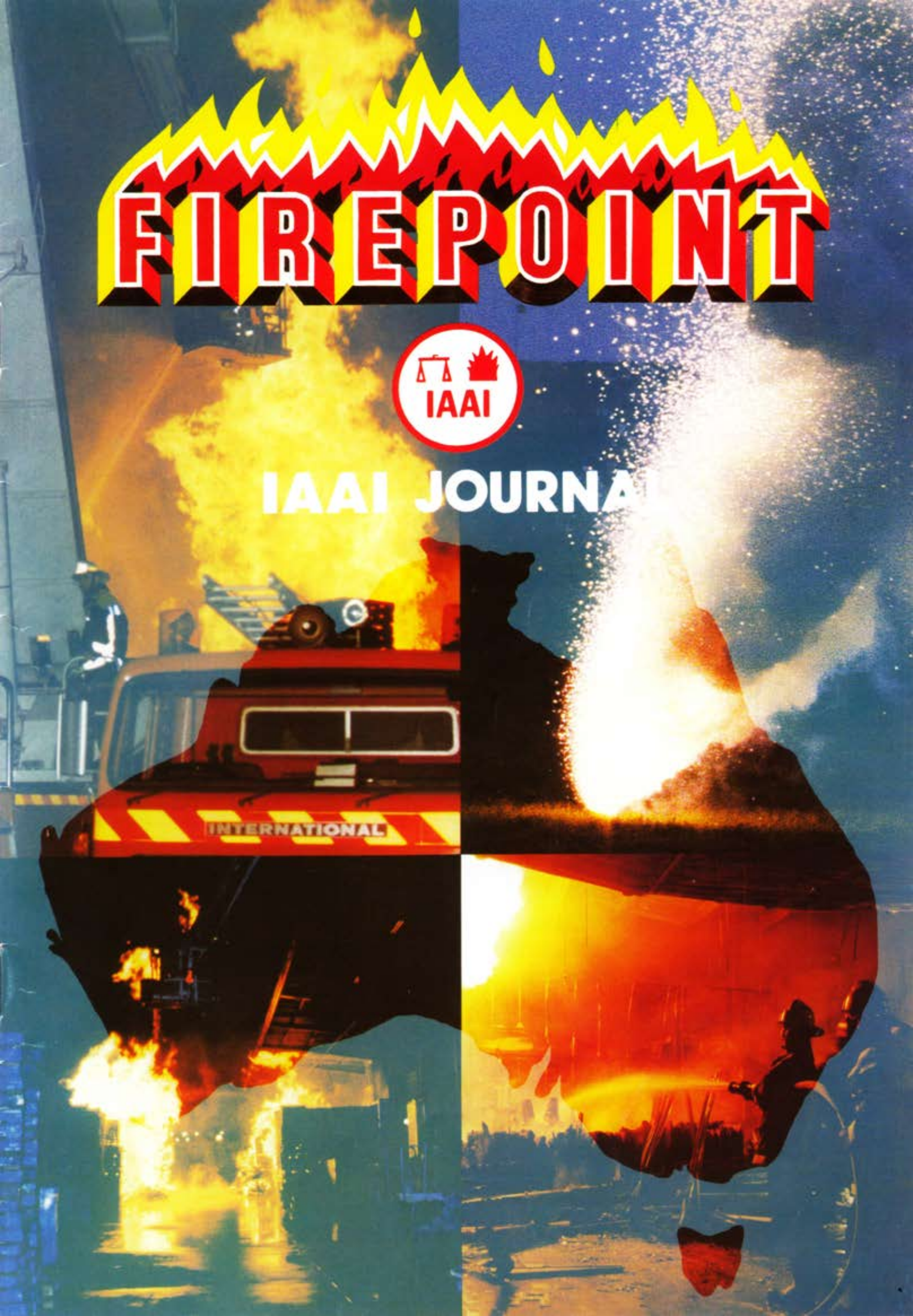
FIREPOINT

IAAI

IAAI JOURNA



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FIREPOINT: IF YOU HAVEN'T PAID YOUR FEES FOR THE CURRENT YEAR, PLEASE DO SO NOW.

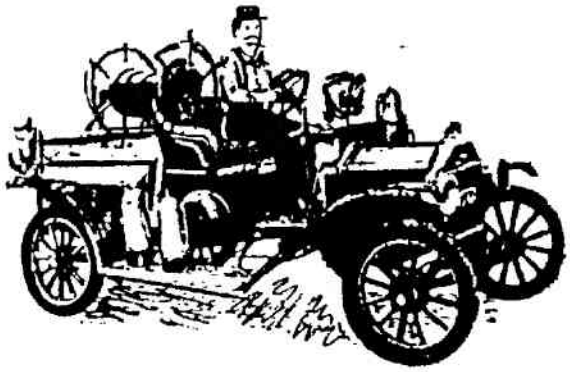
EDITORIAL

All Internationally registered members of the IAAI are informed that they can and should vote in the 2005 Board elections. They can register for an absentee vote registration by emailing the IAAI office Marsha@firearson.com or by obtaining a registration form from the IAAI website, www.firearson.com Standing members information and CV's are available on that website. It is important that all international members eligible to vote do so, to ensure the most eligible member is elected to the Board, to take the association forward. If anyone wishes to discuss individual candidates with Ross Brogan they can contact him at Ross.Brogan@fire.nsw.gov.au

If you would like to serve on an IAAI Committee, please contact 1st Vice President Kirk Hankins (Khank33206@aol.com) or 2nd Vice President Tom Fee (Feeinvest@aol.com.) We would ask that in addition to contact information, you would provide a brief resume and the committee you desire to serve on.

The IAAI will launch a new initiative on February 25, 2005, with a live internet training seminar. Details are available at www.cfitrainer.net It's an exciting, new venture with lots of potential. Check it out.

Wal Stern



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NSW ASSOCIATION OF FIRE INVESTIGATORS INC
(IAAI CHAPTER No.47)

Web: www.nswafi.com.au
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PRESIDENT'S REPORT

Welcome to the first edition of "Firepoint" for 2005. As mentioned in my last report this committee is dedicated to providing you, our members, with the best educational opportunities we can. To this end the education committee is busily working away finalising the details for this year's conference entitled:

ELECTRICAL FIRES; THE SHOCKING TRUTH

The Investigation of Appliance and Electrical Fires.

The conference is to be held at the Carlton Crest Hotel in Sydney on the 18th and 19th of August with a one day, optional hands-on work shop on Wednesday 17th held at RFS Headquarters, Homebush Bay.

We have been extremely lucky to have secured the services of two of the world's leading investigators of electrically based fires; Nick Carey and Mark Svare.

Nick was a firefighter in the London Fire Service before moving to full time fire investigation. He is a qualified City and Guilds electrician. Nick has provided input into a variety of educational courses and conferences specialising in investigation of electrical fires and in 2004 was awarded the Forensic Science Society's Fire and Investigation Diploma from the University of Strathclyde.

Mark is a licensed Master Electrician, an electrical contractor and professional electrical engineer who has been involved in the forensic examination of electrical fires since 1990. He served as an electronic warfare specialist on board U.S.S. Brisco and has taught numerous electrical courses both within the United States and abroad. Mark's practical experience and hands-on approach to investigations has qualified him to provide expert testimony in federal and state courts in the United States.

We have also secured the services of local talent in this most challenging field and believe the combination of local and international speakers will provide delegates with leading edge information and techniques that will place them ahead of the rest.

A call for papers has been sent out to those interested in presenting at the conference, with a closing date of the 31st March 2005. If you believe that you have a presentation that would be of benefit to the broader Fire Investigation Community in the field of electrical fires en please contact Committee Secretary Sonia Casamento at the Association web site.

To continue with our focus on education the committee has organised three educational evenings for this year. As always, these will be provided free of charge and we hope to bring you information and education that will be useful in unravelling the mysteries of Fire Investigation. We will provide further details of dates and topics as they come to hand.

On other matters the Association of Fire Investigators was pleased to hear that two of our own were recognised for their dedicated service to the pursuit of fire safety and fire investigation. Inspector Ross Brogan of the NSW Fire Brigades and Roger Pearce, formerly of the Rural Fire Service, were awarded the Australian Fire Service Medal during the 2005 Australia Day Honours Ceremony. I am sure you join me in congratulating both men in this formal recognition of their hard work and constant vigilance for the people of NSW.

In closing let me say that I look forward to the year ahead. It is fantastic to be able to provide educational opportunities to our membership and we hope that as many of you as possible attend the conference in August and the technical nights planned throughout the year.

Kind Regards

Paul Bailey F.I.Fire.E
NSW AFI President.

NSW ASSOCIATION OF FIRE INVESTIGATORS INC
(IAAI CHAPTER No.47)
ABN 91 718 947 405

80 MOROTAI ROAD
REVESBY HEIGHTS, 2212

The New South Wales Association of Fire Investigators
is proud to present....

ELECTRICAL FIRES:
THE SHOCKING TRUTH
The Investigations of Appliance and Electrical Fires

NSWAFI Conference
August 18th and 19th, 2005

The objective of this two day conference is to promote and enhance the education of personnel involved in various aspects of fire investigations. The major focus points of the conference are -

a) The role and responsibility of all parties involved in appliance and electrical fires. How do they work with each other?
b) The understanding of mechanisms by which electrical faults cause fires in wiring and appliances.
c) The value of evidence in targeting fire safety and cost recovery or litigation.
d) The importance in recognising diagnostic features of appliance and electrical fires.

If you require any information please visit our website www.nswafi.com.au or email us at secretary@nswafi.com.au

Application for Membership

Association of Fire Investigators

(A Chapter of the International Association of Arson Investigators)

I hereby apply for membership of the Association of Fire Investigators in the State of ..... in accordance with its constitution and by-laws, and agree to be bound thereby.

I attach the amount of $..... in payment of annual dues.

---

1. Name in Full
2. Address for Mail
3. Position Held (e.g. police or fire brigade officer, lawyer, investigator, assessor)
4. Company/Agency
5. Telephone
6. Mobile
7. Fax No.
8. E-mail Address
9. Signature
10. Name of Member Recommending you
11. Telephone No. of Member
12. Address or E-mail No. of Member
13. Signature of Recommending Member

Give your completed form with your payment to any committee member of the Association, or mail it to the appropriate postal address, as shown on page 3. This page also lists contact names and numbers if you have any inquiries.

Victorian Chapter News

VAFI WEBSITE

www.vicfire.com

Thanks to Trevor Pillinger our website is regularly being updated with information and all members are reminded to check the notice board for training sessions and other relevant information.

This is the best way all the membership can be updated with the activities of the Association. Remember also if you have any suggestions to please email Trevor.

MEMBERSHIP

There have been some problems with the membership database but they are being resolved thanks to Bob Hetherington. Currently recorded are about 120 members.

Note that as from 1 July 2005 membership fees will be increased to $40.00 . Membership accounts will be forwarded to all recorded members in April this year. To ensure your membership remains current please forward your fees prior to July.

Chapter merchandise is still available (polo shirts, caps & accessories) and members should contact John Lording.

A presentation on the website is being developed and orders can be made via the website.

TRAINING SESSIONS

Listed below are training sessions planned for 2005:

APRIL
Friday 8th April 2005 - Case studies – presentation of three case studies to be held at the MFB Abbottsford.

JUNE
Friday 3rd June 2005 – VAFI presentation – Victorian Fire Investigation Policy & Procedures, to be held at Ballarat.

JULY
Wednesday 13th July 2005 – One Day Seminar – OH&S for Fire Investigation.
Details TBA. This seminar will include the AGM.

SEPTEMBER
Friday September 2005 – Case Studies – presentation of case studies

NOVEMBER
Friday November 2005 – Fire Investigation Training / Prac

Note that all training sessions will be forwarded by mail to all members and advertised on the website. It is important that members book for the training sessions so that arrangements can be made. Be aware that dates and times may change. Any member who have a case study they think may be of interest, please forward a brief summary of the presentation to the committee for consideration. Should be at least 45 minutes.

Liability of Fire Engineers, Case Studies

Ian Moore
Pitt & Sherry

Ian Moore leads the Fire & Risk consultancy section for Pitt & Sherry Pty Ltd, an Australian owned engineering, design, scientific and management services company

Ian has had over 15 years experience as a fire and risk specialist.

INTRODUCTION

This paper provides some concepts and views for discussion purposes regarding the possible liabilities faced by fire engineers.

It should also be noted that although the court system generally follows previous case histories and procedures (torts law) each case is different and no one can accurately predict the outcome of a trial prior to all the facts being established. Hence there are no uniform defence strategies, smart words or methods of writing reports that will be a defence against all, if any claims.

PROFESSIONAL LIABILITY

An idea of what is meant by Professional liability can be obtained from looking at the Californian courts statement on the matter

"By undertaking professional service to a client, an architect (engineer) implicitly represents that he possesses, and it is his duty to possess, that degree of learning and skill ordinarily possessed by architects in good standing, practising in the same locality. It is his further duty to use the care ordinarily exercised in like cases by reputable members of his profession practising in the same locality; to use reasonable diligence and his best judgement in the exercise of his skill and the application of his learning, in an effort to accomplish the purpose for which he is employed... In determining whether the defendants architects learning, skill and conduct full filled the duties imposed by law, as they have been stated to you, you are not permitted to set up an arbitrarily standard of your own. The standard is that set by learning, skill and care ordinarily possessed and practised by others of the same profession in the same locality, at the same time."

As can be seen, the above judgement states that the professional is not held to a duty of extraordinary care but to one exercised by others within his profession.

Accordingly, if the majority of engineers through their guidelines or practices hold that equivalence to the Deemed-to-Satisfy provisions rather than first principle fire engineering is the standard for demonstrating fire safety performance, do engineers that follow a first principle method expose themselves more to litigation and claims of negligence? If so where does this leave innovation and new techniques such as risk? Or even if not required by legislation or common practice by the industry as a whole should an individual fire engineer set a standard above that of the Deemed-to-Satisfy provisions as discussed later which may afford a greater level of protection against litigation.

It is the opinion of the author that we must as a minimum set a standard to the level of the Performance Requirements of the BCA as dictated by the Building Act regardless of what the DTS provisions state or the majority of fire engineers or larger consultancies do.

Accordingly, if we feel that the DTS provisions are deficient in an area we can not merely follow those provisions. Likewise in addressing the Performance Requirements we have to use due care especially with respect to the interaction of the Performance Requirements and the ambiguity of the term "to the degree necessary".

FIRE LAW AND FIRE LEGISLATION

Distinction between Fire Law and Legislation

The problem with the codes and legislation, in terms of the law, was summed up by Mr. Adair Lewis:

> "By far and away the most important single purpose of fire legislation is the protection of life. Its various provisions are so designed as to decrease the threat to life safety posed by fire. With the exception of such specific matters as, for example, the statutory duty of fire brigades to mitigate the damage to property, which may result from fire fighting, commercial considerations are of little concern to our legislators. The fact that many of the provisions of fire legislation will, if adhered to, afford some measure of protection to premises and their contents must be seen as a consequential bonus.
>
> The terms fire law and fire legislation are not synonymous. The law is a composite term that includes all the legal rules however they arise. Common law is based on the common custom of the country, whereas legislation comprises Acts of Parliament and their associated Orders and Regulations."

The distinction between fire law and fire legislation has often been miss understood and compliance under legislation may not provide protection under common law especially for property and contents protection, that are not covered by the legislation.

Use of the Deemed to Satisfy Provisions of the Building Code

It should be remembered that compliance with the building code does not automatically mean that a person is free from litigation as demonstrated by the coronial inquiry and civil litigation resulting from the Manuka Village Shopping Centre fire on the 12 March 1984.

The Coronial inquiry and ensuing litigation included at one stage or another eleven (11) plaintiffs and eight (8) defendants including the architects, the builders, the building inspector or controller, and the Commonwealth Government; and took approximately 8 years to be fully resolved.

The summation of the findings of the coronial inquiry made comments regarding the objectives of the ACT building code with regard to fires.

" The evidence of the building controller Mr. ..... made it clear that there was no law which required an owner of a building the size of the Manuka Village to include fire barriers within the roof or to install a sprinkler system. The policy implemented by the Building Control Section of the Department of Territories and Local Government was that provided a building of this size contained adequate means of egress for members of the public and tenant in the event of fire the building was expendable. Whilst I appreciate there is tension between what should be the minimum requirements of the building controller on the one hand and keeping construction costs as low as practicable on the other hand. I cannot help wondering whether the tenants who have lost their means of livelihood for many months and any insurance companies called on to bear the cost of re-building the Manuka Village complex would regard one policy that the building is expendable in the event of a fire as good

economics when the losses of the tenants and the cost of re-building the complex were compared with the cost of fire barriers within the roof or a sprinkler system either one of which would have prevented the total destruction of the complex."

The BCA like many code and legislation is considered to pay little attention to the contents of the building or the structure of the building once the occupants have been evacuated as long as it did not fall onto another building. Damage to the contents and structure of the building would, as far as the code was concerned, be a matter for the owner and/or insurance companies while protection of the fire brigade is an area of confusion between their own operational and OH&S procedures and building design. It appeared that the fact that a recommendation that sprinklers and fire barriers be installed and was not acted upon formed a large part of the legal debate.

Another action involving a code complying building was with regard to a fire in a small chemical and storage factory located in Enfield, Sydney . The cause of the fire was thought to be arson. In the context of this article it was the claims by the insurance broker, in an attempt to mitigate their loss, that sprinklers and alarms should have been installed that were of particular interest. The building ordinances as they applied when the building was constructed were indicated not to have required the installation of sprinklers and there was some question as to whether the insurers had requested that sprinklers be installed. None the less the matter was to be presented before the supreme court, and has been the subject of a number of technical reports from various experts acting for both sides stating that sprinklers and alarms would and would not have decreased the level of damage. Although the claims were against the building owner it was considered that if the owner was to loose the case he could make a claim against the building surveyor, architect, etc., for not recommending that sprinklers be installed in a similar manner to those raised in the Manuka Village fire.

Yet another example is the claims for negligence in a cold storage fire that did not have sprinklers installed. The claim against the building owner was basically that they failed to keep the stored goods safe due to a fire that destroyed the entire building. The premises had a building permit that did not require the installation of sprinklers and even though today's code would require sprinklers there is no provision in the legislation for retrospective installation of sprinklers or a method for informing building owners who are not familiar with code issues. You therefore have a building that was compliant with the legislation but this compliance is not a protection under law.

It is clear from the above examples that use of the code or strict compliance with the code and building legislation is not necessarily going to prevent a potential claim being raised although it may be a defence. For the fire engineer who makes recommendations on code compliance and the performance requirements based on life safety alone could therefore find themselves defending such a recommendation even though it is accepted the design meets the performance requirements and hence building legislation .

Use of the Performance Requirements and Fire Engineering

A fire within a single modern building would constitute a rare event and therefore the cost of maintenance that would be a regular event could, over time, out weigh the cost from the rare fire event. If it could be demonstrated that

occupants could evacuate safely while certain fire suppression features such as sprinklers were left out of a design resulting in a lower capital and maintenance cost, that may result in higher fire losses the problem would arise in who would benefit from the lower building and maintenance costs?, who would be disadvantaged by the potentially increased fire damage?, and who would pay for the losses?. The building owner would be the one to reap the benefits from the lower building and maintenance costs while the higher individual fire loss would generally be expected to be picked up by the insurance companies and tennants. It has been well recognised that insurance does not pick up all the costs associated with a fire such as loss of good will, etc. The insurers and tenants could therefore seek recovery.

The problem with modelling rare events for placing in risk based fire models and the problem of disadvantaging one group in favour of others were recognised by Brannigan and Meeks in their article "Computerised Fire Risk Assessment Models: A Regulatory Effectiveness Analysis.

Brannigan states that society has not set the code as an acceptable level of risk but rather it is the minimum standard and one set by legislation. Society sets the acceptable level of risk through the laws and court system. Therefore until a court states that following the standard or code frees a person of litigation as it is the accepted standard, can it be considered as the accepted standard. This can be seen from the recent changes in building legislation and the code as a result of court action with respect to the Kew Cottages fires, Childers fire, etc.

POTENTIAL LITIGATION

Spread of Fire

Many of the legal arguments involved in the claims arising from the Manuka Village fire were considered to have attempted to invoke the rule in Ryelands -v- Fletcher by such claims as:

"... the plaintiff says that on 12 March 1984 the first defendants (Chicken Shop owners) brought certain dangerous substances in and onto the said premises occupied by them and under their control, which dangerous substances *(smoke and fire)* escaped from the first defendants' premises..."

In a recent high court decision the rule in Ryelands -v- Fletcher was found by majority (5 to 2) to now be absorbed by the principles of ordinary negligence. Legal advice received indicated that the possible effect of such a decision would be to make the recovery action on the basis of negligence for loss caused by a fire more wide spread due to the lack of a strict liability applying to one party and the requirement of foreseeability in negligence cases.

An example would be the shopping centre design that allows smoke to spill out of a major store into the mall to be naturally or mechanically ventilated from the mall. Although the identity of the shop owners adjacent to the opening into the major store are unknown it is foreseeable that the smoke spilling from the major store would cause them greater damage than if the smoke was exhausted from within the major store. The fire engineers, architects, building surveyors and developer could be held liable for the increased level of damage or at least have a claim made against them.

With regard the Manuka Village complex it was indicated that the arguments used in an action could follow the lines; that the chicken shop owners could foresee that a fire may destroy their shop and damage the building, but it would be unlikely that they would foresee that a fire would spread via the roof space to involve the

whole complex. On the other hand the experience and qualifications of the architect and builder should have allowed them to recognise that lack of sprinklers and a fire barrier could aid in fire spread. They therefore had foreseeability with regard the extent of damage and an alternative course of action was available namely, the installation of the barrier and/or sprinklers. Some joint liability for the fire spread in terms of negligence could therefore have applied to the architects and builders. The arguments against the building controller and government would be less clear.

In his paper to the Conference on Fire Safety Design in the 21st Century entitled, "A Look Into The Future -- Strict Liability For Loss A Possibility, Legal Guidance to the Design Professional in an Environment of Changing Fire Safety Technology", Mr. Piliero etal provide the following advice to the designer of fire safety systems in order to reduce the risk of litigation:

"The design professional is bound to meet or exceed the minimum reasonable level of fire safety when it is specified. Following the industry standard practice may not be sufficient. The wisest strategy for a design professional is to adhere to all relevant fire safety standards and codes, both voluntary and mandatory, including the most recent updates, and to design a state of the art fire safety system using all available information. In this regard, the designer should strive to meet or exceed the required code level of safety and rely on state of the art information. If the goal of containing costs deprives the occupants of a reasonable level of safety, liability is highly likely.... The pressures to reduce expense must be weighed against the reality of potential liability."

The BCA, like all codes and regulations would take time to change in response to advances in technology and societies expectations of levels of safety. Any litigation regarding a fire safety system design would proceed in the light of the technology available at the time of the design or the incident and not necessarily in light of code requirements. The use of fire simulation models would allow the designer a greater ability to foresee the changes in the extent of damage their decisions could cause with respect to strictly following the code or installing features above the requirement of the code. Hence claiming that the code was not up to date in its technology would not necessarily form a defence in terms of foreseeability.

Negligence

The most common form of litigation against engineers involves negligence. Negligence results from the failure of a person to meet a reasonable standard of care in the conduct of his actions. Negligence is not synonymous with intentional wrong doing , but often results from inattention, carelessness or an honest oversight.

A part of negligence requires that a duty of care be owed to the injured party. Another part is that the defendant's actions must be the proximate cause of the plaintiff's injury or damage. In essence this requires that the plaintiff must demonstrate that an unbroken chain of events has led from the alleged wrongful actions of the defendant to the plaintiffs loss.

A possible defence to negligence is that of contributory negligence. This may be important within a fire setting in that the owner of a building through not complying fully with the management requirements of the design has contributed to the risk. However, it could equally be argued that this is a foreseeable event and reliance on systems, such as management plans with

out proper inspection and auditing that are known not to be reliable, is negligent.

Another defence is that of the Assumption of Risk, ie the owner or plaintiff has assumed the risk either expressly or by implication, voluntarily and with full knowledge of the risk, submitted to or accepted that risk. This can become important with respect to jobs such as health care work and work where a government body has final say over a design. In these cases options should be proposed but final decisions on adoption of risk left to the statutory bodies.

Furthermore ,negligence claims require a certain degree of foreseeability. Accordingly, as arson is a foreseeable event it can be claimed that any occupancy where arson is a serious risk must take this into account.

Property / Contents Protection

The claims of negligence against each defendant in the manuka Village shopping centre fire were similar if not identical in each of the actions brought against them. The important claims of negligence from the various actions against some of the defendants, as they related to the design of the building to code only requirements were as summarised below. In reading the below claims it should again be recognised that the building design and construction complied with the ACT building code.
The builders appeared to be the most active in claiming a defence, and in their notice claiming contribution or indemnity from the other defendants, also raised the question of negligence of the Fire Commissioner in not using his statutory power to enforce the installation of sprinklers and fire barriers as well as claiming negligence against the controller in not insisting on the installations.

In their defence the Commonwealth Government referred to a number of acts of parliament and ordinances such as section 63A(1) of the Building Act 1972, the Fire Brigade Act 1957, and section 11(1) of the Limitation Act 1985 that barred actions over 6 years old. The defence also stated that the building controller had no power to refuse approval of plans provided they met the appropriate acceptable requirements and standards.

All the cases were eventually settled without the need for any judgements as to negligence on behalf of any of the parties. The settlements were generally against the chicken shop although in the case of the shop trading as an "optical dispenser" the settlement of $39,000 was stated in the court records to be against the first defendant listed as the Building Controller.

If a ruling had been made on the claims of negligence it could have acted as a precedent for other cases and in time possibly become part of torts law. Accordingly designers and builders could have found themselves having to install all available fire protection equipment, or follow the recommendations of the fire brigade, so that they would be covered in the event of litigation whether the code required the recommendations and equipment or not.

On the other hand a decision that it was not the responsibility of the builders, etc. to install equipment above that required by the code or to comply with the recommendations of the fire brigade would have helped to prevent such a case developing in the future.

Criminal Prosecution

A potentially more serious trend in the litigation of the design professional has been the trend towards the desire to lay criminal charges against design professionals such as engineers and

architects. Two such cases in Australia against engineers have been the laying of manslaughter charges against a NSW state rail employee for the collapse of an embankment at Coledale and the charges brought against the Dandenong engineer for the collapse of a wall at a swimming centre. The two areas that were considered real "danger" areas by lawyers were Occupational Health and Safety, especially in Victoria, and Environmental protection, both of which contain criminal penalties within their respective acts. No record of a person having faced criminal charges over the design of a fire safety system has been located although given the very real risk to life the design professional could come under close scrutiny if negligence was proved. Some aspects of a fire safety system design could also fall under the auspices of occupational health and safety.

Rod Slater the then managing partner of the law firm Phillips Fox was stated in a relatively recent Business Review Weekly article regarding actions against professionals saying;

"There is much greater awareness in the community of the duties of professional people. This in turn has quite clearly led to an increase in civil litigation against all professionals. I think it follows from that, that in serious cases there is now going to be a tendency for the authorities to become involved to seek to apply criminal sanctions"

In civil cases such as the Manuka Village fire the professionals involved would have had the protection of professional indemnity insurance or the principle of vicarious liability where the employer in most circumstances would be held responsible for the actions of the employee, such as in the case of the building controller and the Commonwealth government. In criminal law no such principles would apply.

It was generally held that criminal prosecution would only be successful in cases of extreme negligence. The APEA has formally recognised the potential for criminal litigation and after the Coledale incident recommended that their members sign a document called a discharge of professional responsibility. The document constituted a form that engineers would send to their superiors when they could see a potential problem and a possible remedy. Documentation of all aspects of a fire safety system design including its limitations and the results of all meetings with the clients was also the advice of Mr. Piliero etal. for the design professional to minimise the risk of prosecution. Lawyers, however stated that the signing of disclaimer type forms would not be protection from possible prosecution.
The then APEA's executive director, John Vines, recognised the incidence of criminal charges against engineers was steadily increasing;

"With the introduction of health and safety legislation in most states now, its likely there will be much greater incidence of employees, particularly professional engineers, being saddled with criminal charges."

REGISTERED BUILDING PRACTITIONERS AND INSURANCE

The Building Act within Victoria

The Victorian provisions of the Building Act 1993 has allowed for private issuing of building permits by building surveyors, removal of the fire brigade as a regulatory authority and hence the greater use of fire engineering. The building act has also allowed for proportionate liability rather than joint and several liability that lead to the deep pocket syndrome. However with respect to liability there has also been some unintended results.

The issue relates to the wording of Section 131;

1. After determining an award of damages in a building action, the court must give judgement against each defendant to that action who is found to be jointly or severally liable for damages for such proportion of the total amount of damages as the court considers to be just and equitable having regard to the extent of the contribution for the loss or damage that defendants responsibility.

2. Despite any act or rule of law to the contrary, the liability for damages of a person found to be jointly or severally liable for damages in a building action is limited to the amount for which judgement is given against that person by the court.

The effect of the above is that the court will only be able to apportion liability as between defendants in the same action. If there is only one defendant then that defendant will bear all of the liability.

This point was considered by Mc Donald who stated;

"The Victorian and Northern Territory statutes appear only to deal with a defendants liability in proportion to that of other defendants in the same action, whereas the South Australian legislation, by not referring to "the same action" would appear to allow a court to take into account the contribution to the damage of persons who are not necessarily parties to the action."

This means that if an engineer is the only named defendant in an action then they face the total liability and it is not proportioned. However, if another defendant is named then proportional liability holds. Therefore if a plaintiff wishes to avoid the intent of the Building Regulations, ie the abolition of joint and several liability, they need only name one defendant which will obviously be the one with the deepest pocket.

In the case involving Robak, Boral as a supplier of concrete tried to join the subcontractor, Forster Hall, to an action brought by the building contractor Robak. Boral sought to have Forster joined so that it could have apportioned liability, Forster naturally declined to be involved in the action and Robak opposed the application so that they could avoid the apportioning of liability and hence the deepest pocket, ie Boral, if found even liable with respect to only a portion of the damages would be liable for all the damages. The right of the plaintiff to sue who it sought fit was upheld and Forster were not involved.

The National Model Building Act (NMBA) states that apportionment was to occur between parties to an action and that those parties could not obtain contribution from each other. However, it also provided that a person could seek contribution from any other tortfeasor not a party to the action.

CONCLUSIONS

As can be seen from the above discussion and case studies the fire engineer cannot merely rely on equivalence with the DTS provisions of the BCA or satisfying the performance requirements to guarantee freedom from litigation. He or she should look at the fire safety design from the point of view of all stakeholders including those not immediately obvious or known in order to determine the level of risk and affects of decisions. The final design path chosen should then either mitigate those risks or the fire engineer make sure all other parties are fully aware of the implications of such decisions.

REFERENCES

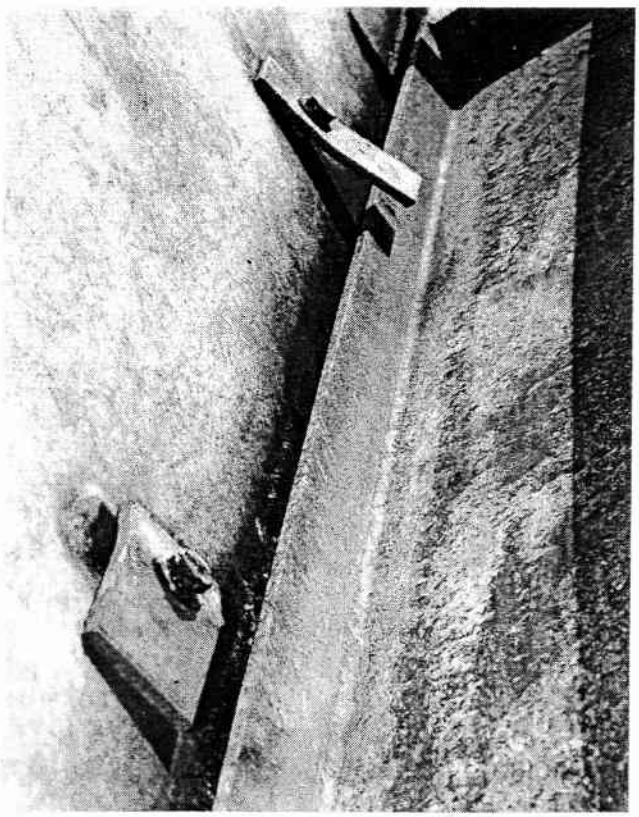
The references cited in this article can be viewed at the NSW AFI web site , www.nswafi.com.au

This is the second and final part of a Summary Report on a fire from the NSW Fire Brigade. The first part was in the December 2004 issue of "Firepoint".

Photo 1:

Unit 21 showroom showing radiated heat damage from point of origin with spa units in foreground totally destroyed. Mezzanine level in top left of picture

Photo 2:
The upper section of the steel columns deflect inwards under load of the roof supports leaving a gap of approximately 250mm.



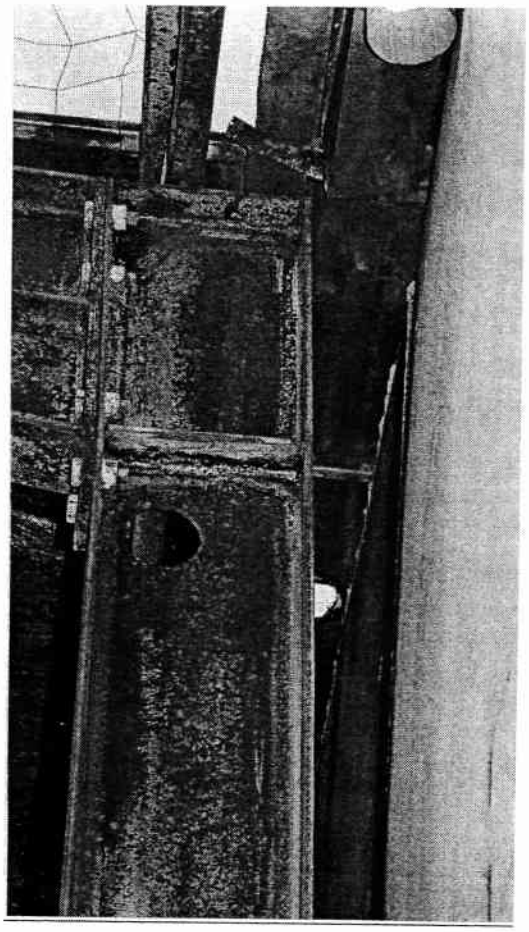


Photo 6. Steel joining plate welds fail at columns meaning tilt slabs are at greater risk of collapse.

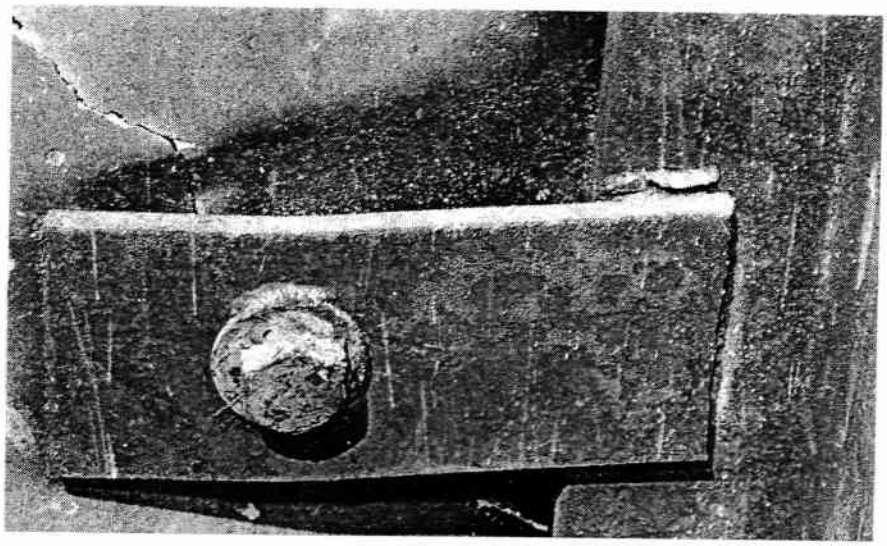


Photo 7: Plate joining the columns to the tilt slabs showing weld separation under heat load and cracking of slab behind bolt as tilt slab deflects.

Comments:

This incident highlights the dangers involved in attending incidents involving this type of construction. Incident Controllers and firefighters need to be aware of buildings using this type of construction in their area and the dangers that evolve when impacted by fire. Other factors to remember are:

- Structural steel loses approximately two thirds of its strength at approximately 550 degrees Celsius.
- Tilt slabs can be unpredictable in fires and might collapse either inwards or outwards with very little warning.
- Steel roof beams, when heated, will expand pushing columns and walls outwards and then possibly bend under their own weight pulling columns inwards. These roof beams will also suffer contraction movement as they cool in post fire operations.
- Any distortion of the steel beams or columns through exposure to fire can have a serious effect on the stability of the tilt slab panels,
- Take particular notice of any wall deflection away from the top of the columns and cracks that appear in the walls.

The NSW Fire Brigades Safety Bulletin 2000/7, *Structural Collapse*, highlights the need to establish safe working zones around buildings with 'tilt slab' concrete panels.

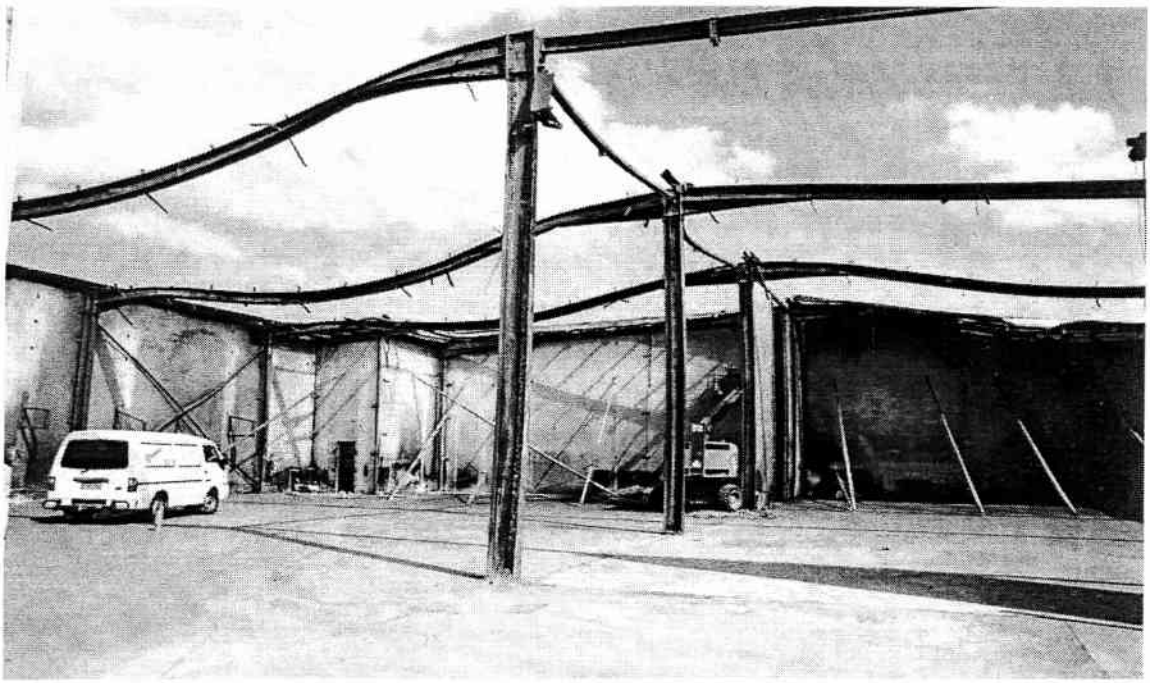


Photo8:
Factory units 21 and 23 after clearance of debris and before demolition showing roof trussing severely deformed as a result of fire

2. Lack of fire protection for video surveillance computer hardware and loss of data for post-fire investigation analysis.

According to the unit owner, there had been approximately 20 security cameras located in and around the two factory units. These closed-circuit cameras downloaded their information to the hard drive of a central computer located in the mezzanine office of unit 21. This office was impacted by fire. Subsequently, any evidence of events prior to the incident that might have been

recorded was destroyed. Although not an issue previously documented by FIRU, this author's preliminary research indicates that this is a common occurrence in large fires where security surveillance hardware is kept on the premises.

The Police Forensic Services Group and the insurance company representatives were contacted and both confirmed that surveillance video data stored on computer hard drives was rarely salvaged when fires impacted the area where the computers were located.

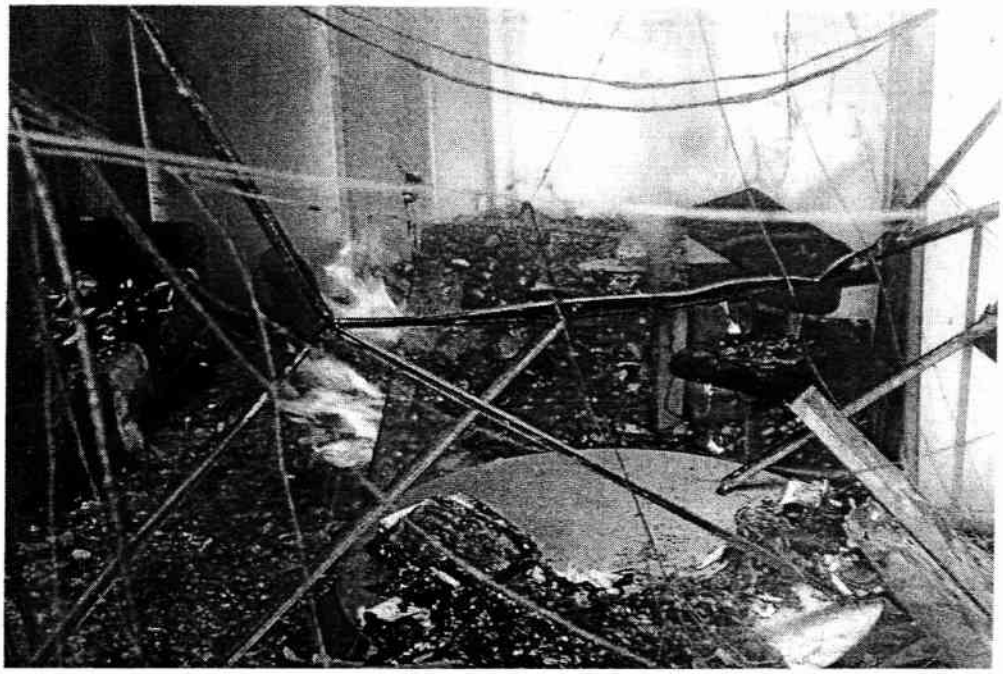


Photo 93: Although affected by fire, the video surveillance units would probably have been recoverable if they were in a fire rated cupboard rather than on a desk.

Comment:

Due to the importance of this recording equipment and its value to the Fire Brigades, Police, and the insurance company post fire investigation, the following is proposed:

- The computer equipment with the surveillance data to be kept in a fire-rated cupboard. A one hour fire-rated cupboard would be suitable for the majority of fires if its location was available through onsite information in order to allow resources to provide exposure protection to the area. These cupboards could be locking which would provide additional security from theft.

  OR

- The computer equipment with the data to be kept remote from the monitored premises either at the owner/tenant's premises or at the security monitoring company's local offices.

3. Arrangement of storage racks, perpendicular to skylights, allowing faster fire spread as well as a lack of separation in the skylights between units.

The storage racks were placed at a 90 degree angle to the skylights in factory units 21 and 23 and this may have contributed to faster fire spread. Also, this arrangement does not allow maximum advantage to be taken of natural lighting from the skylight.

Photo 10:

Factory unit 21 with high bay racking system running perpendicular to skylights. Note skylights running unbroken over dividing brick wall.

Comment:

Although this premise is classed as an occupancy of excessive hazard by the Building Code of Australia (BCA) and although the storage racks are in excess of 4 metres in height, the floor area is under 2000m^3 and the aggregate storage volume is less than 1000m^3, therefore there is no requirement of a sprinkler system. This does not resolve the risk to operational personnel in dealing with this type of racking system and its contents in a fire.

The arrangement of storage racks running perpendicular to the skylights does not enable a fire involving the racks to vent upwards through the skylights. Instead, the fire can only vent in the one spot and this causes greater fire spread along the racks until it is able to vent through the next row of skylights. This problem was highlighted in the FIRU Post Incident Summary Report No. 30/02, *Gloria Jeans Factory Fire* in October, 2002 where it was a prominent factor in the spread of fire throughout that structure.

Additionally, the skylight directly above the top of the internal brick wall hastened the spread of fire to unit 23. By replacing the clear polymer panels over internal walls with steel panels, similar to those covering most of the roof, and ensuring those panels extended a minimum of 1 to 2 metres either side of the separating wall, the possibility of fire spread to an adjoining unit would be reduced. In this incident, it might possibly have stopped the fire spread to unit 23.

CONCLUSIONS AND RECOMMENDATIONS

This summary report has been written to highlight several issues of concern arising from the fire that occurred at Aristocrat Spa Pools on 2nd March 2004.

Tilt slab construction has been used extensively in industrial and commercial buildings throughout NSW over the last decade due to the cost and time effectiveness of construction. Numerous cases of unpredictable collapse as a result of fire damage have been documented by FIRU and Fire Safety. The median dollar loss resulting from fires involving this type of construction is increasing and the extent of these properties being saved is decreasing due to the type of fire fighting strategies being utilised to ensure operational safety for firefighters.

The following recommendations are made regarding the highlighted issues of concern:

Issue 1: Loss of Integrity of tilt slab construction resulting from impact of fire.

1. Station Commanders are encouraged to take note of this type of construction in their area when carrying out pre-incident plans and to ensure that their personnel are aware of the dangers involved when fighting fires on these premises.

2. A database of these incidents be developed by FIRU, in consultation with Fire Safety, in order to document the problems associated with this type of construction. This database is to be used to build a case highlighting the impact that fires in this type of construction can have on the operational safety of fire fighters, the safety of occupants and surrounding premises.

3. Operational personnel to review the operational safety bulletin in order to reinforce the dangers posed and to increase the awareness of this type of construction. NSW Fire Brigades Safety Bulletin 2000/7 Structural Collapse.

Issue 2: Lack of fire protection for video surveillance computer hardware and loss of data for post-fire investigation analysis.

1. Further research into the frequency of this occurrence should be carried out by FIRU in order to highlight the possible benefits to be gained by the fire brigades and external organisations from the protection and collection of this information. NSW Police and insurance companies have expressed an interest in this project.

Issue 3: Arrangement of high-bay storage racks perpendicular to skylights allowing faster fire spread.

1. A greater awareness of the risks, design and layout of these rack systems needs to be discussed further through the Building Regulations Advisory Committee.

2. The companies that design and provide these systems need to accept greater accountability for insuring the safest and most effective use of these systems. They must take into consideration the fire hazard posed by incorrect positioning when roof skylights are present and the desire to maximize natural light in factory units.

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This is the second and final part of the NSW Fire Brigades Post Incident Report on a fire which occurred at Aristocrat Spas Factory, Prestons on 2nd March, 2004.